

POPULATION STATUS AND CONSERVATION OF HOOLOCK GIBBONS *HYLOBATES HOOLOCK* HARLAN 1834 IN BANGLADESH¹

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¹Accepted September 2006

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Hoolock Gibbon (*Hylobates hoolock* Harlan 1834) is the only ape that occurs in the Indian subcontinent. The species is classified as endangered and their numbers have declined throughout their geographic range primarily due to habitat destruction. We determined the current status of the Hoolock Gibbons in Bangladesh. A total of 35 sites (10 in the north-eastern region and 25 in the south-eastern region) were surveyed for Hoolock Gibbons from 2002 to 2005. A total of 282 Hoolock Gibbons in 96 groups was estimated to live in 24 of the 35 sites visited. Several sites have lost all their Hoolock Gibbons within the last 15 years. Karnafuli (part of Kaptai National Park) in the south-east and Lawachara National Park in the north-east were recognised as two major strongholds of Hoolock Gibbons. Conservation of the remaining Hoolock Gibbons of Bangladesh rests on the future management of their patchy forest habitats. We recommend the cessation of illegal deforestation, habitat restoration and translocation of individuals to maintain these last Hoolock Gibbon populations in Bangladesh.

Key words: Hoolock Gibbon, *Hylobates hoolock*, status, conservation, Bangladesh

INTRODUCTION

Gibbons are socially monogamous small apes that hold a very important position in the ecology of tropical forests (Preuschoft *et al.* 1984; Chivers 2001). They have been under considerable threat primarily due to habitat destruction throughout their range. Among the 13 gibbon species, Hoolock Gibbons *Hylobates hoolock* are the only ones that occur within the Indian subcontinent and are perhaps under the greatest threat throughout their geographic range (Mootnick *et al.* 1987; MacKinnon and MacKinnon 1987; Islam and Feeroz 1992; Feeroz 1999, 2001; Choudhury 2001). Habitat destruction is the principal cause of population decline (Gittins and Akonda 1982; Gittins 1984; Gittins and Tilson 1984; Chivers 2001; Islam *et al.* 2004). They are distributed in various north-eastern states in India, with a current total population of more than 2,600 individuals (Molur *et al.* 2005). Their distribution in southern China and Myanmar is recognised, but population estimates are from the 1980s (Mootnick *et al.* 1987; MacKinnon and MacKinnon 1987). In Bangladesh, Hoolock Gibbon populations were estimated to be around 3,000 individuals in the mid 1980s (Gittins and Akonda 1982). This number had subsequently crashed to about 200 individuals in the 1990s (Feeroz and Islam 1992). The declining trend continued in many areas of Bangladesh, with some areas having lost all of its Hoolock Gibbons (Feeroz 2001; Das *et al.* 2003; Islam *et al.* 2004). The observed decline

are concomitant with the ongoing deforestation throughout the country's forested areas (Gain 2002). Hoolock Gibbons are apparently holding on tenaciously to some last extant forests in Bangladesh. Currently, the species are globally endangered (IUCN 2004) and in Bangladesh, they are classified as Critically Endangered (IUCN 2000).

Assessing the number of Hoolock Gibbons is a key to the understanding of their status and for developing a conservation plan to prevent extinction of the species. Generally, assessing primate populations is a difficult task that invariably leads to inaccurate estimates (Ross and Reeve 2003; Nijman 2004). This is particularly true for gibbon species, due to the fact that they use the forest canopy for movement and foraging (O'Brien *et al.* 2004). The objective of this study was to determine the population status of Hoolock Gibbons, in all the remaining habitats.

STUDY AREA

The present study was conducted in all the known Hoolock Gibbon habitats in Bangladesh, along with some habitats previously not surveyed. Thirty-five sites were surveyed (Fig. 1). The north-eastern and south-eastern regions of Bangladesh consist of semi-deciduous and moist evergreen forest patches with a wide variety of tree species (Rashid 1991; Ahsan 2001). Each region has its distinct tree composition and forest canopy characteristics (Ahsan 2001).

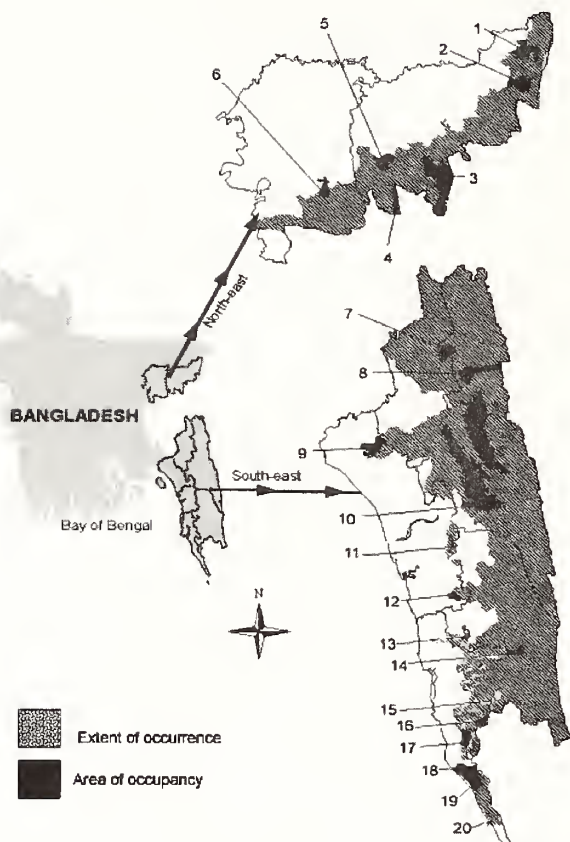


Fig.1: Hoolock Gibbon survey sites in Bangladesh. Some sites are combined due to their close proximity.

1. Baralekha, 2. Lathitila, Sagarnal, 3. Adampur, Gazipur Tea Estate, Horinchara, 4. Rema-Kalenga, 5. Lawachara, Chautoli, 6. Satchari, 7. Dighinala, Ramgar, 8. Pablakhali, Kudhukhoza, 9. Korerhat, Hazarikhil, 10. Rampahar, Karnafuli, (Kaptai) 11. Dopachari, 12. Chunati, Satghar, 13. Bamu, 14. Thanchi, 15. Alikadam, 16. Sangu, 17. Fashiakhali, Bhomarighona, Bangdepa, Bishari, Rajghat, Apar Rezu, 18. Inani, 19. Ukhia, 20. Teknaf.

Ten sites were identified from the north-eastern region (Fig. 1 and Table 1). Most of the sites fall under the jurisdiction of different forest divisions and have suffered extensive deforestation over the last two decades (Gain 2002). However, many of the sites contain habitats that may be regarded as suitable for Hoolock Gibbons (Feeroz 1999, 2001; Islam *et al.* 2004, 2006).

METHODOLOGY

At each site, locals were consulted for identifying possible locations of Hoolock Gibbon groups. One local guide was taken and existing paths within the forest patch or streams were walked on by a team of 2-4 individuals. The team conducted census walks between 0500 and 1730 hours with a total of two hours break throughout the entire period. Every

5-10 minutes the members of the team would stop to look around for signs of Hoolock Gibbon presence. This included hearing of calls; scanning the tree line with binoculars for Hoolock Gibbons in the canopy; looking for important fruiting trees (such as species of *Artocarpus* and *Ficus* etc.). When calls were heard, an attempt was made to assess the direction of the call and then to locate the group. Once located, the age-sex structure of the group was ascertained, with the assignment of each individual to either adult male, adult female, subadult male, subadult female, subadult (undetermined sex), juvenile or infant following Feeroz (1991) and Ahsan (1994). When counting Hoolock Gibbons in high-density areas (such as Lawachara and Kaptai), extra time and effort was given to ensure that double counts were not made by visiting the sites repeatedly and ascertaining numbers and age-sex structure. The coordinates of the encounter sites were determined using a hand-held Global Positioning System (GPS). The GPS coordinates were recorded into a computer and the locations of the groups plotted on digital and paper maps of the area. When the group could not be located, the group size was conservatively assumed to be two individuals and the coordinates were recorded, along with the direction and approximate distance from the calling group. The total distance travelled during walks was estimated from the GPS readings of the starting and ending points, and from the GPS coordinates taken from various locations during the census walk (including those of Hoolock Gibbon encounters).

RESULTS AND DISCUSSION

Two hundred and fifty eight Hoolock Gibbons in 80 groups were recorded during this survey at all the sites (Table 1). Additionally, 12 distinct groups with an estimated 24 individuals were heard calling, making the total population to be an estimated 282 individuals in 92 groups.

It is clear that Hoolock Gibbon populations have undergone massive decline since the 1980s, primarily due to habitat destruction, although they continue to survive in small pockets of fragmented forests in Bangladesh. The largest population in the north-eastern region is in Lawachara National Park, within west Bhanugach Reserve Forest (Table 1). Additional populations in Adampur and Baralekha are of importance, each having larger than or equal to ten individuals, assumed to be required for long-term viability (IUCN 1994; Islam *et al.* 2006). In recent years, the south-eastern region had been deemed unsuitable for Hoolock Gibbons due to acute habitat loss and political unrest (Gain 2002; Islam *et al.* 2004). We identified Karnafuli (within Kaptai Forest range), a series of highly fragmented secondary

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Table 1: Hoolock Gibbon (HG) populations recorded at 35 sites during 2002-2005 (based on observed groups and calling groups)

Sites	Days of counting	Groups counted	Individuals counted	Groups calling	Numbers calling ^a	Estimated groups ^b	Estimated numbers ^c
North-east (10 sites)							
Baralekha	9	3	10			3	10
Lathitila	2	1	5	2	4	5	9
Shagarnal	2	0		1	2	1	2
Gazipur Tea Estate	6						
Lawachara NP	40	11	42			11	42
Chautoli	2	1	4			1	4
Adampur	13	8	21			8	21
Horinchara	6						
Rema-Kalenga WLS	8	2	2			2	2
Satchari NP	11	2	7			2	7
South-east (25 sites)							
Dighinala	7	1	2			1	2
Pablakhali WLS	7	1	4			1	4
Ramgar	6						
Korerhat	6						
Hazarikhil WLS	8	1	4			1	4
Bishari	2	2	8			2	8
Bengdepa	2	2	7	1	2	3	9
Karnafuli (Kaptai NP)	27	23	78	3	6	26	84
Rampahar (Kaptai NP)	9	4	14	1	2	5	16
Chunati WLS	11						
Satghar	6						
Fashiakhali	6						
Bamu	5	4	14			4	14
Thanchi (Tindu mouza)	2	2	4	1	2	3	6
Khudhukoza	1	2	5			2	5
Dopachari	3	2	5	1	2	3	7
Sangu	1	1	2			1	2
Alikadam	2						
Rajghat	1			1	2	2	2
Bhomarighona	8						
Himchari NP	7						
Inani	8	2	6			2	6
Ukhia (Thankhali)	9	5	14			5	14
Teknaf GR	6			1	2	2	2
Upper Rezu	1						
TOTAL	250	80	258	12	24	96	282

a. number of HG groups calling x 2 (individuals/group)

b. number of HG groups counted + number of HG groups calling.

c. number of HG individuals seen + estimated number of HG calling

forest patches, having sufficient habitat to hold large number of Hoolock Gibbons (Islam *et al.* 2004). Extended monitoring activity in the area revealed the largest stronghold of Hoolock Gibbons in the country with 84 individuals. Rampahar Beat (also within Kaptai Range), slightly separated from Karnafuli was noted to have 16 individuals, further increasing the number of Hoolock Gibbons in the area.

The rest of the scattered populations of less than

9 individuals vary in terms of importance. Some have been evaluated entirely (e.g. Lathitila, Rema-Kalenga, north-east; and Dighinala, Pablakhali, Hazarikhil, Teknaf, south-east) and are unlikely to have any more individuals. Other populations have not been surveyed adequately (e.g. Thanchi, Kudhukoza, Dopachari, Sangu, all in the south-east) and more thorough surveys in these areas could yield more Hoolock Gibbons, although the south-eastern region, in general, has had a more

devastating history of deforestation (Gain 2002).

The “forested lands” administered by Bangladesh officially represent about 17% of the total land area of Bangladesh, although the true area of forest cover is likely to be less than 6% (Gain 2002). Within the forestlands, there are about 16 protected areas categorised into National Parks, Wildlife Sanctuaries or Game Reserves (Kabir and Muzaffar 2002). These protected areas are recognised merely on paper. Illegal harvesting of forest products (timber, fuel wood etc.) continues unabated, often in connivance with the forest officials. Most of the areas within protected forest patches are fragmented and have areas of agricultural land, small villages, grazing land and other human altered habitats that make the quality of these areas extremely poor. In spite of all these major habitat problems, the Hoolock Gibbons present in various protected and unprotected forest patches show extraordinary resilience. The minimum assumed viable population of Gibbons is 10 individuals (IUCN 1994) and this is supported to a certain extent by mathematical models (Molur *et al.* 2005; Islam *et al.* 2006). Many of the populations noted in this study are much smaller in size than this theoretically viable minimum and thereby regarded as genetically destined to extinction.

Immediate cessation of deforestation in all the areas above is required. Since this is very difficult to accomplish given the socio-political dynamics of each region, at least safe-guarding the important fruiting and sleeping trees, along with protection of some closed canopy forest patches is essential (Islam *et al.* 2006). To supplement the protection and preservation of forests, habitat improvement and restoration in many of these areas should be done. Plantation of mixed fruiting tree species may be carried out on a large scale to attempt to restore degraded habitat where suitable. Careful examination of all areas with Hoolock Gibbons is also needed to assess the feasibility of translocation of doomed Gibbon populations into areas that are doing relatively better.

Populations such as the single Gibbon in Rema-Kalenga and the few odd individuals each in Shagarnal, Hazarikhil, Teknaf, Inani and Himchari may have a better chance of survival if moved to areas with better habitat (e.g. Satchari in the north-east, and Bamu and Ukhia in the south-east). These manipulative methods may be the only hope for these individuals and need to be seriously considered.

We conclude that the total population of Hoolock Gibbons in Bangladesh in the current estimate is higher than that made in the nineties (around 200 individuals, Feeroz and Islam 1992). However, many of the previously important sites (e.g. Horinchara, Chunati) are now devoid of Hoolock Gibbons and this is cause for great concern. Conservation action should be directed towards protecting the remaining Hoolock Gibbon strongholds from further degradation, translocating genetically compromised populations and restoring forest lands through plantations of mixed native plant species (Islam *et al.* 2006). Public awareness is on the rise and the Government of Bangladesh is a signatory to various biodiversity conventions, the future could hold some promise if immediate action is taken in attempting to save the remaining Hoolock Gibbons.

ACKNOWLEDGEMENTS

We thank the US Fish and Wildlife Service for funding this project through its Great Ape Conservation Program. We are grateful to the Forest Department of the Government of Bangladesh for access and accommodation at many of the study sites. The work would have been impossible without the efforts of many students and volunteers. We thank the Departments of Zoology, Jahangirnagar University and the University of Dhaka; and the School of Environmental Science and Management of Independent University, Bangladesh for permitting and facilitating research activities at different study sites.

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